

**REMARKS**

Applicants and their undersigned attorney have carefully reviewed the first Office Action of April 4, 2005 in the above-identified patent application, together with the prior art references cited and relied on by the Examiner in the rejections of the claims. Contrary to the conclusion of the Examiner, applicants believe that the present invention is not anticipated by, and is not obvious in light of, the prior art. In response to the Office Action, however, the claims of the application have been amended to more clearly define the subject invention over the prior art cited and relied on by the Examiner. Reexamination and reconsideration of the application, and allowance of the claims is respectfully requested.

The subject application discloses and claims a method and additive for lowering the amount of carbon in fly ash resulting from the combustion of coal. Importantly, the invention is not about fly ash, soot or smoke reduction generally. It is about the reduction of carbon in the fly ash that does result from combustion. More specifically, the method and additive relate to the combining of a manganese-containing compound with the coal prior to or during the combustion of the coal. As the application notes, manganese is a naturally occurring element in coal, yet fly ash produced from coal combustion has a relatively high carbon content. It has been discovered that the addition of manganese to the coal combustion process before or during combustion significantly lowers carbon content in fly ash. It is hypothesized that the naturally occurring manganese does not have the same effect as it is bound together in crystalline or macrocrystalline form. A manganese-compound additive was found to be effective when added in mononuclear form.

In the present Office Action of April 4, 2005, Claims 1-20 were rejected under 35 U.S.C. 102 (a, b and e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious in light of, Kukin 3,837,820 or Kukin 3,692,503, Kerley 3,927,992, Rolfe 3,443,916, Doyle EP0268353, Pahlman CA2424120, or Tranquilla WO 2002097330 (also published US 2002/0189497). The Office Action alleges that each reference teaches the treatment of fly ash from coal combustion by adding a manganese-containing additive that results in a reduction of the fly ash carbon content. In the alternative, it is the Examiner's contention that the use of a particular manganese containing compound would have been "obvious". The Examiner contends, without support,

that no particular manganese-containing compound provides a result unexpected over another manganese containing compound.

The prime objective of Kurkin '820 is to improve the effects of fuel combustion, particularly with regard to emitting sulphur trioxide in the stack gases and improving the condition of the boilers where the combustion is carried out. This is accomplished by adding oxides or hydroxides of magnesium and/or manganese (see Col 6, lines 55-59).

The prime objective of Kurkin '503 is to provide a specially activated manganese-containing fuel additive to retard the corrosiveness and the slag buildup of those residual fuels which contain such an amount of vanadium as normally to yield a corrosive and ash depositing vanadium-containing slag upon combustion.@ The addition of manganese oxides, hydroxides, carbonates and similar basic salts is contemplated (see Col. 2 lines 45-46).

The Kurkin references do not teach or suggest a manganese organometallic compound effective to reduce the amount of carbon in fly ash. The Examiner has not identified any language in the Kurkin references teaching or suggesting the use of a manganese organometallic compound to reduce carbon in fly ash. The references also do not discuss, teach or suggest the specific additive injection points contemplated by the present invention. The independent claims have been amended to more clearly define the present invention as involving organometallic compounds to distinguish from the disclosure and teachings of the Kurkin references.

Kerley >992 is assigned to the owner of the subject application, and it teaches a method of reducing the smoke and sulfur trioxide produced when burning coal by introducing a small quantity of a metal cyclopentadienyl compound into the combustion chamber with the coal. One such compound is a methylcyclopentadienyl manganese tricarbonyl. Kerley does not suggest, recognize, or teach carbon in fly ash reduction much less the use of a manganese compound to reduce carbon in fly ash.

Rolfe '916 is directed to reducing the amount of smoke, sulfur trioxide and dioxide, sulfuric acid, carbon monoxide, the nitrogen oxides, unburnt hydrocarbons, carbon particles, and large ash agglomerates@ (see abstract). Fly ash is discussed at Col. 2 (lines 16-22). The reduction of carbon in fly ash is not discussed or suggested.

Doyle EP 0268353 teaches adding an "additive into the combustion flue gas stream intermediate the boiler and economiser" (see abstract). The patent nowhere recognizes carbon in

fly ash. Clearly the reference does not suggest or teach the use of a manganese additive combined with coal to reduce carbon in fly ash wherein the additive/fuel mixture is combusted.

Pahlman et al. also does not teach or disclose the use of a manganese-containing compound for the reduction of fly ash, and the Examiner has not pointed to any language to support the contention that the reference teaches the treatment of fly ash wherein such treatment results in a reduction of fly ash carbon content.

Tranquilla discloses a method for reducing carbon levels in fly ash comprising the steps of placing the fly ash in a microwave reactor, exposing the fly ash to microwave radiation in the presence of carbon-free material and terminating exposure of the fly ash to the microwave radiation when the carbon content of the fly ash has fallen below a predetermined value. Tranquilla does not teach a method related to the combustion of coal. It is solely an after-treatment system and method. Clearly, this reference does not anticipate the subject application in terms of 35 USC 102. Not only does it does not suggest the present invention, but applicants believe that it is nonanalogous art that is improperly used for a 35 USC 103 rejection.

None of the cited references teach all of the elements of the present invention. Reconsideration of the rejections under 35 USC 102 is respectfully requested.

It is also respectfully requested that the Examiner, upon further consideration of the claims rejected under 103, keep in mind that the proper application of the obviousness test of 35 U.S.C. 103 requires one to picture the person of ordinary skill in the art as having the references before him without any knowledge of applicant's invention. If the references themselves do not suggest the desirability of modifications necessary to the achieve an anticipation of a claim, they do not render the claimed subject matter obvious in the sense of 35 U.S.C. 103. The necessity of avoiding hindsight reconstruction was well stated by the Court of Customs and Patent Appeals in the case of In re Rothermel and Waddell, 125 USPQ 323 at 331 (1960), wherein the court noted:

The examiner and the Board in rejecting the appealed claims did so by what appears to us to be a piecemeal reconstruction of the prior art patents in light of appellant's disclosure...It is easy now to attribute to this prior art the knowledge that was first made available by appellants and then to assume that it would have been obvious to one having the ordinary skill of the art to make these suggested reconstructions. While such a reconstruction of the art may be an alluring way to rationalize a

rejection of claims, it is not the type of rejection which the statute authorizes. 35 U.S.C. 103 is very specific in requiring that rejection on the grounds the invention would have been obvious must be based on a comparison between the prior art and the subject matter as a whole at the time the invention was made.

This requirement for a detached viewing of the teachings and suggestions of the references necessitates that Examiners study the references and determine what their teachings would be to a person who has not read applicant's application or read his claims. If the references are considered in the foregoing manner, it is most respectfully submitted that they do not provide a proper anticipation of the rejected claims under 103. The Examiner's rejections under 103 consist of statements identifying elements in the prior art and conclusively stating they suggest the elements of the present invention. Not only do the components not teach or suggest the claimed invention alone or in combination, but the Office Action does not provide a reason for modifying the references cited by the Examiner in the manner suggested by the Examiner **except** to arrive at applicant's specifically defined construction, taught only by applicant's disclosure.

The prohibition against hindsight analysis and conclusory statements is further supported by the of the Board of Patent Appeals and Interferences language in Ex parte Clapp, 227 USPQ 972 at 973, wherein the Board, in reversing the Examiner, held "to support the conclusion that the claimed combination is directed to obvious subject matter, either the *references must expressly or impliedly suggest the claimed combination or the Examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references*" (emphasis added). Applicant has been unable to find either an express or implied suggestion of applicant's claimed invention in the references and no reason has been put forward as to why the inventor would have found the claimed invention to have been obvious in light of the referenced patents, taken alone or in combination.

An obviousness rejection cannot be predicated on the mere identification of individual components of claimed limitations. There must be evidence that "a skilled artisan, confronted with the same problems as the inventor and with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination in the manner claimed."

In re Rouffet, 149 F.3d 1350, 1357 (Fed. Cir. 1998). “[I]t is incumbent upon the examiner to identify some suggestion to combine the references or make the modification.” In re Mayne, 104 F.3d 1339, 1342 (Fed. Cir. 1997). The showing of obviousness must be clear and particular, and broad conclusory statements about the teaching of one or more references, standing alone, are not evidence. Brown & Williamson Tobacco Corp. v. Phillip Morris, Inc., 229 F.3d 1120, 1125 (Fed. Cir. 2000). Finally, it is improper to use an inventor’s patent as an instruction book on how to reconstruct the prior art. Panduit Corp. v. Dennison Manufacturing Co., 810 F.2d 1561 (Fed. Cir. 1987). Reconsideration of the rejection under 35 USC 103 is respectfully requested.

Please note that a Terminal Disclaimer has been filed in connection with the Examiner’s provisional rejection of claims 1-20 under the doctrine of obviousness-type double patenting.

Finally, the Examiner rejected claims 1-20 under 35 U.S.C. 112, second paragraph for failing to set forth the subject matter which applicant regards as their invention. The Examiner considers the word “combining” to not be clear in claim 1. The plain language usage of “combining” is intended. Specifically, the additive and the coal are brought into a close relationship. Applicant is not required to specify in the claim language how the additive and coal are dropped, mixed, stirred, or otherwise combined. The plain meaning of the word sufficiently sets forth the subject matter.

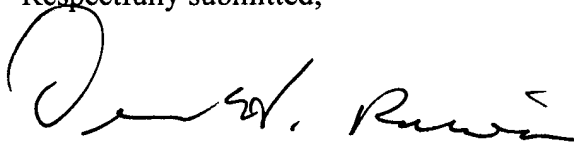
Applicant appreciates the correction of the Markusch language and the identification of the arguably indefinite terms and “the like” and “such” in Claim 5. The objections are well taken and Claim 5 has been amended accordingly.

In conclusion, claims 1, 3-5, 12, 15 and 19 have been amended to more clearly define the present invention of the cited references. Claims 2 and 6 have now been canceled. Claims 7-14, 16-18 and 20 were previously presented and are allowable or now depend from allowable base claims. Claim 21 has been added. It is believed that the claims now pending are patentable over the prior art cited and relied upon in the Office Action. Further, the applicant contends that the claims objected to under U.S.C. 112 are clearly not indefinite, as amended. In view of the foregoing, reconsideration and re-examination of the application, allowance of the claims, and the passage of the application to issue is respectfully requested.

**Fees**

This Response is believed to be timely filed on Tuesday, July 5, 2005, because the due date of July 4, 2005 falls on a Federal holiday. Therefore, it is believed that there are no fees associated with this filing. However, in the event the calculations are incorrect, the Commissioner is hereby authorized to charge any deficiencies in fees or credit any overpayment associated with this communication to Deposit Account No. 05-1372.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Dennis H. Rainear", with a large, stylized initial "D".

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